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# The Relationship Between Reported Problems and Patient Summary Evaluations of Hospital Care

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*What causes patient satisfaction? Is it determined by the type of patient receiving care or by the type of care that is delivered? The findings from this nationwide survey of 6,455 adult discharged patients suggests that satisfaction—or what is more accurately described as patients' evaluations of quality—is more a function of what is done for the patient than of what kind of patient is being treated.*

*Cleary and colleagues used multivariate statistical methods to attempt to tease out the impact of different factors on patients' evaluations of hospital quality. They looked at several possible predictor variables, including (1) patient demographics (for example, age, sex, education, income), (2) patient health status, (3) patient preferences for being more or less informed and involved in their own care, and (4) patient reports on problems that relate to specific processes of care (for example, provision of financial information, physical care, emotional support, pain management).*

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*What they found was that the only really strong predictor of patient satisfaction—that is, the variable that had a strong independent effect after controlling for other variables, was the number of problems reported by the patient. The characteristics of patients, (for example, age, income, health status, and preference for being more involved and informed) all made statistically significant but very small independent contributions to predicting patients' overall evaluations of the quality of care.*

*This study is well done but it has some important limitations. For example, data on hospital characteristics were not controlled, patient clinical severity data was not available, for less than one-half of invited hospitals elected to participate in the research, and the sample was limited to voluntary medical and surgical hospitals. Nevertheless, this research delivers an important message. To wit, if a hospital aims to improve patient satisfaction, then it can do so by improving all the processes that "touch" the patient so that the patient experiences no problems, "hassles," or deficiencies in any aspect of the care that is received. Hospitals that do the best job at designing robust care giving processes that in fact meet diverse patient needs and expectations—processes for managing pain, insuring physical comfort, offering emotional support, planning for discharge, and addressing patients special preferences—will enjoy the highest level of patient satisfaction and will most likely produce the greatest health benefit. —Eugene C. Nelson, DSc, MPH, Director, Quality of Care Research, The Quality Resource Group, Hospital Corporation of America, Nashville, Tennessee.*

Health care providers and other professionals are increasingly becoming interested in using patients' evaluations of their care to complement other methods of quality assessment and quality improvement.<sup>1-14</sup> However the majority of quality monitoring activities have focused on technical processes and physiologic outcomes. The theoretic and practical issues involved in measuring patient perceptions of the quality of their hospital care have been reported,<sup>9-14</sup> but the majority of the literature on patient satisfaction is based on studies of outpatient care.<sup>8</sup> Although many hospitals routinely collect data on patients' satisfaction with their care, there has been relatively little published work describing the determinants of satisfaction in hospitalized patients.<sup>14-19</sup>

Studies have been conducted to evaluate the associations between patient characteristics and patient ratings of their care;<sup>8-9</sup> however the results have been inconsistent—with a few exceptions. Older patients tend to be more satisfied with their care than younger patients, women tend to be more satisfied than men, and patients in poorer health often are less satisfied than healthier patients;<sup>8,20</sup> yet there has been little analysis of the factors that might account for these associations.

If patient reports are to be used effectively for quality assessment, it is important to know how patients' overall evaluations of care ratings are related to patient characteristics and to learn which types of experience most influence patient summary ratings.

To address some of these issues, we (the authors) conducted a nationwide telephone survey in 1989 by interviewing 6,455 adult patients recently dis-

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charged from medical and surgical services of 62 general hospitals in the continental United States. We wanted the patients (1) to report whether specific events (determinants) that occurred during their hospital stay affected their care and (2) to make an overall evaluation of their care.

In an earlier article<sup>21</sup> we described and reported the characteristics of the sample, the proportion of patients reporting problems in response to each of the questions asked, and the patient characteristics that were related to the number of problems reported. In this article we describe the patients' overall evaluations and examine the extent to which patients' reports of specific events and patient characteristics predict their overall evaluations.

## Methods

**Hospital selection.** A probability sample of not-for-profit hospitals that had general medical and surgical patients and more than 100 beds was eligible to participate. Hospitals were stratified by ownership (public or private), region (East, South, Midwest, West), and teaching status. A disproportionate random sample was selected from each stratum using sampling probabilities that would yield a similar number of hospitals in each stratum.\*

Of the 141 hospitals eligible to participate in the survey, 62 agreed to participate. The reasons given for non-participation ranged from insufficient administrative staff or resources to compile a list of the hospital's eligible patients; lack of interest in patient

reports; difficulty in selecting a sample of patients; concern that the identity of the hospital would be revealed; logistic problems due to the hospital's relocation or closing; potential confusion with internal marketing surveys; unwillingness to comply with the protocol; and/or medical board refusal. One hospital board declined participation because it did not like the questionnaire. Participation rates were somewhat higher among academic health centers and larger hospitals and in the Midwest and South—but not significantly ( $P > 0.05$ ).

**Patient selection.** Using lists—supplied by each hospital—of patients discharged one month prior to the project's inception, we attempted to interview a random sample of approximately 100 eligible patients from each hospital within 6 months of their discharge.<sup>21</sup> A total of 8,728 patients (or their relatives) were eligible for the survey. Of those, 239 patients were *not* eligible because either they were discharged from the hospital shortly after the interview was initiated, were readmitted to a hospital or a nursing home, or they had died in the hospital; 1,128 patients did not complete an interview because they said they were too sick; and 906 patients refused to be interviewed. Thus 6,455 (76%) patients completed an interview.

## Interview Process

**Reports about process of care.** A large proportion of the interview focused on specific events that occurred during hospitalization (for example, "Consider important questions about your care that you wanted to ask your doctor. Did you get answers you could understand?"). The questions about processes focused on patient education and communication between patient and provider, respect for patient needs and preferences, financial information, provision of physical and emotional comfort, family involvement, and discharge preparation. The interview took between 17 and 42 minutes to complete (mean, 25 minutes). If a patient said that he or she usually spoke Spanish at home, the interview was conducted in Spanish. (The specific events asked about have been

described in detail elsewhere.<sup>21</sup>)

**Evaluation of care.** The summary evaluation scale\* consisted of seven items (aspects of care) that assessed patients' evaluation of the

- courtesy and helpfulness of nurses;
- courtesy and helpfulness of doctors;
- availability of nurses;
- organization of hospital staff;
- organization of hospital services;
- cleanliness and comfort of the room; and

• overall evaluation of the care received.

Each of the aspects of care were rated on a five-point scale, with responses ranging from "excellent" to "poor." Other questions are listed in Table 1 (see p 55).

**Patient preferences.** The measure of patient preferences was derived from the Autonomy Preference Index.<sup>25</sup> To measure patients' preference for involvement in the decision-making process, patients were asked to rate the following two statements on a four-point scale (agree strongly, agree somewhat, disagree somewhat, or disagree strongly):

- "You should go along with your doctor's advice even if you think it's wrong;" and
- "A hospitalized patient should not make decisions about his or her own hospital care."

The response categories were coded so that a high value indicated preference for involvement, and a mean value was obtained for the responses to the two statements.

To assess preference for information, patients were asked to rate the following statements (using the same four-point scale):

- "Even if medical news is bad, a patient should be told about it;" and
- "When there is more than one way to treat a problem, you should be told about the choices."

We coded the responses so that a high value indicated a preference for information and a mean value was again obtained.

**Perceived health.** At the completion of the interview, patients were asked to rate their health as excellent, good,

\*The project team used the 1988 American Hospital Association Hospital Survey data base to select the sample. (American Hospital Association: 1988 Annual Survey of Hospitals [unpublished data base]. Chicago, 1989.)

\*The summary evaluation scale is based on items used in previous studies.<sup>8,22-24</sup>

fair, or poor; whether their health was better than expected, close to what they expected, or worse than they expected; whether they felt back to "normal"; and how many days (all day or part of the day) the illness or injury had kept them in bed in the preceding two weeks after hospitalization. (These questions were taken from previously used measures.<sup>4</sup>)

*Sociodemographic characteristics.* The interviewers also asked the patients' age, sex, race, education, and income.

## Analyses

*Reports about problems with care.* To simplify analyses of the responses about problems with specific dimensions of care, we created several indices. For each patient interviewed, a score was created for each dimension assessed by calculating the percentage of all questions in that area that had responses indicating a problem. Thus the scores range from 0% (no problems in that area) to 100% (responses to all questions in that area indicated a problem). To create a total score (total problem score) the scores were averaged for each area. Questions or areas were not weighted because for these types of scales most weighting schemes would yield a total score that was highly correlated with the unweighted score.<sup>26</sup>

*Statistical analyses.* To describe the bivariate associations between continuous variables (for example, evaluation of care) we used Pearson product-moment correlation coefficients. To describe the association between continuous and dichotomous variables (for example, sex) point-biserial correlations were used. To assess the significance of differences in evaluations among groups of patients, analysis of variance was used.

We used linear regression models to analyze the multiple associations among patient characteristics, processes of care, and patient evaluations. The models included the statistically independent predictors of the total problem score and the summary evaluation score. A forward search procedure was used to select all variables at the 0.01 level of significance.

To adjust for the various potential

**Table 1. Patients' Evaluation of Their Hospital Care (N=6,455)**

Overall satisfaction with care	
• excellent	48.5%
• very good	31.4%
• good	13.9%
• fair	4.4%
• poor	1.8%
Average evaluation score (SD)	4.01 (9.83)
Patient got angry about care while in hospital	15.3%
Evaluation of length of stay	
• substantially shorter than needed	3.0%
• a little shorter than needed	7.5%
• about right	83.0%
• longer than needed	6.6%
Would recommend the hospital to family and/or friends	93.5%

effects of hospital and patient non-participation,<sup>27,28</sup> we developed a set of poststratification weights<sup>29</sup> that yielded a sample similar to a representative national sample of discharged patients with respect to sex, race, age, and region. Data from the 1987 National Hospital Discharge Survey<sup>30</sup> were used to determine the reference population. Unweighted data were presented and the impact of weighting on the results was then evaluated. Because of the large sample size, comparisons were described as statistically significant only if  $P < 0.1$ .

## Results

*Sample.* Compared with the patients discharged from short stay in the United States in 1987,<sup>30</sup> the survey somewhat underrepresented both older and younger patients, as well as non-white patients and those with lower incomes; however the distribution of characteristics is similar to that of patients treated in such hospitals nationwide.<sup>21</sup>

*Patient evaluations of care.* Overall satisfaction of care was very high; 80% of patients indicated that the care they had received was excellent or very good (Table 1). Fewer than 11% indicated that their hospital stay was either substantially shorter or a little shorter than needed, while 15.3% indicated that they were angry about their care in the hospital. Fewer than 7% indicated that they would not recommend the hospital to family and/or friends.

Responses to the seven evaluation

questions were highly correlated. The internal consistency of the resulting scale (coefficient alpha) was 0.91. The Cureton corrected item-to-total correlations<sup>31</sup> varied from 0.60 to 0.78, and the removal of no single item improved the internal consistency of the scale. The responses to each of the seven items were averaged to create an overall evaluation score.

The patient characteristic most strongly correlated with patient evaluations was perceived health status (see Table 2, p 56). Age and sex had moderate, significant correlations with evaluations. Patients who expressed a preference for more involvement in their care and low-income patients generally gave worse evaluations of their care.

To examine the importance of problems within different dimensions of hospital care in determining patient evaluations, we calculated zero-order correlations between the index of problems in each dimension of care and the overall evaluation (see Table 3, p 56). These correlations varied between  $-.37$  and  $-.58$ , except for financial information, which had a correlation of  $-.18$  with the total satisfaction score. The mean problem score for each dimension (total problem score) was more strongly correlated with overall evaluations ( $r = -.62$ ) than any of the problems for each dimension when evaluated separately.

Next we calculated the correlations between the average problem score in each area and selected patient characteristics (see Table 4, p 57). These data

**Table 2. Correlations Between Patient Characteristics and Evaluations of Care**

Patient Characteristics	Correlations with Evaluation Score
Age	.09**
Sex (male=1; female=2)	-.06**
Education	.03*
Income	.05**
Perceived health status	.23**
Preference for involvement in medical decision	-.12**
Preference for medical information	-.05**

\* $P < 0.01$ ; \*\* $P < 0.001$ .

**Table 3. Correlations Between Evaluation of Care and Number of Reported Problems with Care for Different Dimensions\***

Communication	-.49
Financial information	-.18
Patient needs and preferences	-.58
Emotional support	-.50
Physical comfort and care	-.53
Education	-.37
Pain management	-.40
Family involvement	-.39
Discharge preparation	-.38
Total problem score	-.62

\*All correlations are statistically significant ( $P < 0.001$ ).

indicate, with the exception of perceived health and age, that the associations between patient characteristics and problems with care were weak and relatively uniform across areas. The correlation between perceived health status and the problem scores ranged from 0.10 to 0.18. While the correlation between age and the domain scores was less than 0.05 for the four domains, it was greater than 0.15 for physical care and pain management.

To clarify the meaning of the associations between age and different areas of care, we calculated the mean problem scores for patients in different age groups for each area of care (see Table 5, p 58). These data show that the proportion of problems with communication was similar for the three age groups examined. For other aspects of care, younger patients tended to report more problems; for example, they were almost twice as likely (16.9%

versus 9.0%) to report problems with pain control as were older patients.

Figure 1 (p 57) summarizes the regression models of the relationships among patient characteristics, problems with care, and patient evaluations. These results indicate that, as expected from the simple correlations, the total number of problems with care was the strongest predictor of the overall evaluation. Controlling for the total problem score, both age and perceived health status were significantly correlated with overall evaluations. The regression model explained 41% of the variation in overall patient evaluations. Thus, although the problems and patient characteristics measures were good predictors of how patients evaluated their care, a substantial proportion of the variance remains unexplained. When these analyses were repeated using the weighted data, the results were substantively identical.

Perceived health was by far the strongest predictor in the regression model of the number of problems reported, with age being the second strongest predictor. The model in Figure 1 explains only 7% of the variance in the total number of problems reported.

## Discussion

In earlier analyses,<sup>21</sup> we examined whether the association between reported health status and the number of problems reported reflected potentially confounding factors, such as race, length of stay, and care by a personal physician. Results indicated that health status was the strongest predictor of the number of problems reported, even after numerous potentially confounding factors were statistically controlled. Similarly, in the analyses reported here, poor health was identified as the strongest predictor of the number of problems with different aspects of hospital care—even when controlling for age, income, and patient preferences.

This survey also showed that patients were generally very satisfied with the care they received. Consistent with previous research studies, sicker patients gave worse evaluations of their care than healthier patients and older patients gave better evaluations than younger patients. Sicker patients were also more likely to report problems in each of the specific aspects of care examined.

Some might argue that these results are understandable and acceptable. Sicker patients are more likely to be in pain, to be distracted, and to have difficulty with communication. Nevertheless, sicker patients probably have the most need of, and could benefit the most from, improvements in such aspects of care. It undoubtedly is easier and more pleasant for providers to talk to, and provide support to, patients who are recovering well; however the fact that it is difficult to provide care to sicker patients emphasizes the importance of monitoring the way all patients are treated and ensuring appropriate education, communication, and accommodation of patient needs and preferences.

We do not know why older patients reported fewer problems with selected aspects of their care and gave better

overall evaluations. It has been suggested that older patients might have lower expectations and therefore were more easily satisfied.<sup>8</sup> If this were the case, such a strong negative association between age and number of problems reported would not have been expected, and associations would have been more uniform. Another possible explanation is that clinicians are more attentive to older patients. Providers may think that younger patients are better able to endure the physical discomfort and pain associated with certain medical and surgical conditions and may consequently devote more attention to the needs of older patients. Although this would be appropriate, it also is possible that providers may be underestimating the needs and capabilities of younger patients. (More research is needed to understand these associations.)

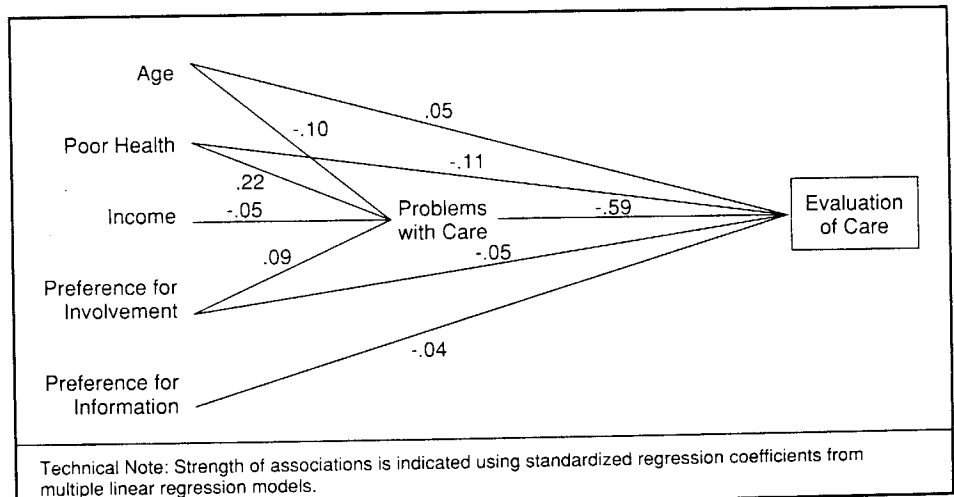
Unlike earlier studies,<sup>14</sup> this study demonstrated only weak sex differences in either evaluations of care or reported problems. In multivariate regression models, sex was not significantly associated with either the number of problems reported or with patient evaluations. In addition, multivariate models of the relationships among patient characteristics, measures of problems, and evaluations suggest that most of the age and health status differences in evaluations can be explained on the basis of differences in the number of problems reported. After the number of reported problems are statistically controlled, both health status and age are still significantly related to evaluations, but the associations are much weaker.

The results suggest that the associations observed in the past between patient characteristics and evaluations are not an artifact of reporting biases but rather reflect differences in the type of care received. Data from a survey such as the one used in this study could be routinely collected by hospitals to identify the types of problems that are most likely to occur with different subsets of patients. Such information could enable health care managers to focus their efforts to improve the quality of care for all patients—especially sicker patients,

**Table 4. Correlations Between Patient Characteristics and Reported Problems with Care in Different Domains**

Area of Care	Patient Characteristic						Preference for Involvement	Preference for Information
	Race	Sex	Age	Education	Income	Poor Perceived Health		
Communication	-.06**	.02	.02	-.02	-.04**	.17**	.06**	.04*
Financial information	-.08**	.03*	-.07**	-.09**	-.16**	.12**	-.01	-.01*
Patient preferences	-.06**	.01	-.14**	.05**	.00	.16**	.13**	.00
Emotional support	-.03	.01	.00	-.05**	-.05**	.14**	.03**	.05**
Physical care	-.02	.00	-.15**	.06*	.02	.12**	.10**	-.01
Education	-.00	.00	-.01	.01	.00	.15**	.09**	.03
Pain management	-.05*	.04	-.16**	.03*	.00	.10**	.07**	-.01
Family involvement	-.06**	.00	-.10**	.04*	.01	.13**	.12**	.00
Discharge preparation	-.02	.05**	.04**	-.01	-.06*	.18**	.06**	.05**

\* $P < 0.01$ ; \*\* $P < 0.001$



**Figure 1.** This figure summarizes the regression models of the relationship among patient characteristics, problems with care, and patient evaluations.

who appear to have the most problems.

Similarly, the associations between age and the number of problems experienced and patients' overall evaluation of care raise the question of the factors that account for the apparently better experience of older patients. Quality improvement efforts could examine the way care is provided to patients in different age associations among

case mix, process, and evaluations.

It is important to note that previous analyses<sup>8</sup> that included other variables such as characteristics of the hospitalization (for example, length of stay) explained only 9% of the variance. Taken together, these results suggest that more than 90% of the variation in the number of problems experienced is accounted for by factors

**Table 5. Problem Scores in Each Dimension for Patients in Different Age Groups**

Dimension of Care	Patient Age (years)		
	<45	45-65	>65
Communication	17.1	16.1	17.7
Financial information	16.1	14.9	11.6
Patient preferences	12.0	9.1	7.2
Emotional support	18.5	17.4	18.7
Physical care	14.0	10.6	7.9
Education	13.6	12.1	12.4
Pain management	16.9	12.2	9.0
Family involvement	15.7	11.9	8.7
Discharge preparation	17.4	16.8	19.0
Total problem score	15.5	13.6	13.1

other than the measured patient and hospital characteristics. Clearly, more work needs to be done to understand how medical care organization and delivery affects the quality of hospital care, from the patients' perspective. The large amount of unexplained variance strongly suggests that there is tremendous potential for improvement within the current constraints on the way care is delivered.

#### Future Investigations

If patient reports are to be used to monitor the quality of care, it is important to develop a better understanding of the patient characteristics and hospital experiences that have the most influence on patient evaluations. The findings presented in this report suggest the value of combining information about the process of care with patient evaluations. In future work it would be useful to collect information about the process of care both from the patient and from other sources (for example, physicians and nurses). Although this interview asked about specific events to minimize the influence of patients' varying expectations, it is possible that some of the associations observed reflect differential attention to, or memory of, certain types of events occurring during hospitalization. To develop a complete understanding of the factors, from the patient's perspective, that influence the quality of care, better measures of case mix

and process should be developed, and information from patients should be routinely collected so that the associations among case mix, process, and patient evaluations can be more precisely determined.

#### Concluding Remarks

More than 25 years ago, Donabedian<sup>32</sup> stimulated an effort in theoretic and empirical work on quality assessment that is burgeoning. Interestingly, little of the recent systematic work on quality assessment and quality assurance has taken advantage of the information and perspective that only patients can provide. Clinicians and managers often do not know how to interpret the fact that most patients think their care is "excellent" or "very good." Similarly, general evaluations do not suggest actions to improve the quality of care. As more recent work in quality improvement suggests,<sup>1,3,5,7</sup> it is important to document, examine, and disseminate information about features of institutions that foster exemplary care. By focusing on factors that determine the quality of the aspects of care studied herein, we can advance efforts to monitor and improve the overall quality of care. If hospitals begin to implement routinely the types of information reported here, they will be able to improve selected aspects of care that are important to patients but that are not captured in traditional quality assessment methods.

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